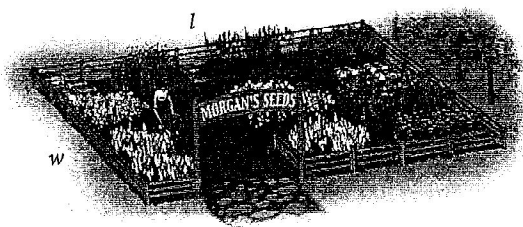


50. *Angle Measure.* In triangle  $ABC$ , angle  $B$  is twice as large as angle  $A$ . Angle  $C$  measures  $20^\circ$  more than angle  $A$ . Find the measures of the angles.
51. *Test-Plot Dimensions.* Morgan's Seeds has a rectangular test plot with a perimeter of 322 m. The length is 25 m more than the width. Find the dimensions of the plot.



52. *Garden Dimensions.* The children at Tiny Tots Day Care plant a rectangular vegetable garden with a perimeter of 39 m. The length is twice the width. Find the dimensions of the garden.
53. *Soccer-Field Dimensions.* The width of the soccer field recommended for players under the age of 12 is 35 yd less than the length. The perimeter of the field is 330 yd. (Source: U.S. Youth Soccer) Find the dimensions of the field.
54. *Poster Dimensions.* Marissa is designing a poster to promote the Talbot Street Art Fair. The width of the poster will be two-thirds of its height and its perimeter will be 100 in. Find the dimensions of the poster.
55. *Water Weight.* Water accounts for 50% of a woman's weight (Source: National Institute for Fitness and Sport). Kimiko weighs 135 lb. How much of her body weight is water?
56. *Water Weight.* Water accounts for 60% of a man's weight (Source: National Institute for Fitness and Sport). Emilio weighs 186 lb. How much of his body weight is water?
57. *Train Speeds.* A Central Railway freight train leaves a station and travels due north at a speed of 60 mph. One hour later, an Amtrak passenger train leaves the same station and travels due

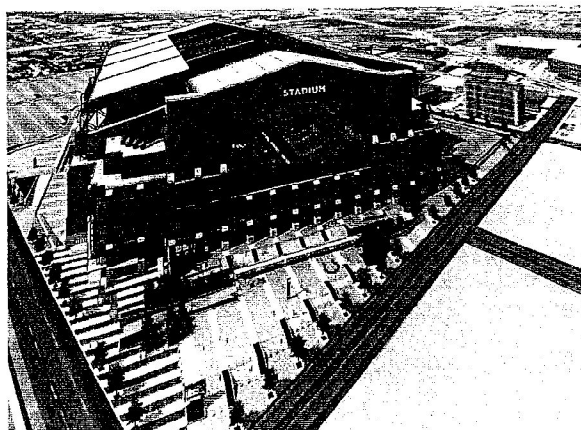
north on a parallel track at a speed of 80 mph. How long will it take the passenger train to overtake the freight train?

58. *Distance Traveled.* A private airplane leaves Midway Airport and flies due east at a speed of 180 km/h. Two hours later, a jet leaves Midway and flies due east at a speed of 900 km/h. How far from the airport will the jet overtake the private plane?
59. *Traveling Upstream.* A kayak moves at a rate of 12 mph in still water. If the river's current flows at a rate of 4 mph, how long does it take the boat to travel 36 mi upstream?



60. *Traveling Downstream.* Angelo's kayak travels 14 km/h in still water. If the river's current flows at a rate of 2 km/h, how long will it take him to travel 20 km downstream?
61. *Flying into a Headwind.* An airplane that travels 450 mph in still air encounters a 30-mph headwind. How long will it take the plane to travel 1050 mi into the wind?
62. *Flying with a Tailwind.* An airplane that can travel 375 mph in still air is flying with a 25-mph tailwind. How long will it take the plane to travel 700 mi with the wind?
63. *Investment Income.* Erica invested a total of \$5000, part at 3% simple interest and part at 4% simple interest. At the end of 1 yr, the investments had earned \$176 interest. How much was invested at each rate?
64. *Student Loans.* Dimitri's two student loans total \$9000. One loan is at 5% simple interest and the other is at 6% simple interest. At the end of 1 yr, Dimitri owes \$492 in interest. What is the amount of each loan?

65. *Calcium Content of Foods.* Together, one 8-oz serving of plain nonfat yogurt and one 1-oz serving of Swiss cheese contain 676 mg of calcium. The yogurt contains 4 mg more than twice the calcium in the cheese. (Source: U.S. Department of Agriculture) Find the calcium content of each food.
66. *Uninsured.* There were 55.8 million people in the United States without health insurance in 2005. This was 17.2 million less than twice the number of uninsured in 1987. (Source: U.S. Census Bureau) How many people were without health insurance in 1987?
67. *NFL Stadium Elevation.* The elevations of the 31 NFL stadiums range from 3 ft at Giants Stadium in East Rutherford, New Jersey, to 5210 ft at Invesco Field at Mile High in Denver, Colorado. The elevation of Invesco Field at Mile High is 247 ft higher than seven times the elevation of Lucas Oil Stadium in Indianapolis, Indiana. What is the elevation of Lucas Oil Stadium?



68. *Prison Population.* It is estimated that there will be 1.7 million adults in prison in the United States in 2011. This is about 5.4 times the number of adults in prison in 1980. (Sources: Pew Charitable Trusts; Bureau of Justice Statistics) Find the number of adults in prison in the United States in 1980.

69. *Volcanic Activity.* A volcano that is currently about one-half mile below the surface of the Pacific Ocean near the Big Island of Hawaii will eventually become a new Hawaiian island, Loihi. The volcano will break the surface of the ocean in about 50,000 yr. (Source: U.S. Geological Survey) On average, how many inches does the volcano rise in a year?
70. *Erosion.* Because of erosion, Horseshoe Falls, one of the two falls that make up Niagara Falls, is migrating upstream at a rate of 2 ft per year (Source: *Indianapolis Star*, February 14, 1999). At this rate, how long will it take the falls to move one-fourth mile?



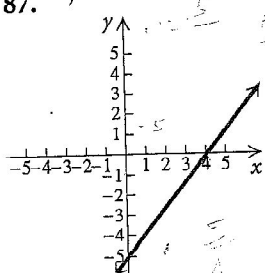
Find the zero of the linear function.

- |                                |                       |
|--------------------------------|-----------------------|
| 71. $f(x) = x + 5$             | 72. $f(x) = 5x + 20$  |
| 73. $f(x) = -2x + 11$          | 74. $f(x) = 8 + x$    |
| 75. $f(x) = 16 - x$            | 76. $f(x) = -2x + 7$  |
| 77. $f(x) = x + 12$            | 78. $f(x) = 8x + 2$   |
| 79. $f(x) = -x + 6$            | 80. $f(x) = 4 + x$    |
| 81. $f(x) = 20 - x$            | 82. $f(x) = -3x + 13$ |
| 83. $f(x) = \frac{2}{5}x - 10$ | 84. $f(x) = 3x - 9$   |
| 85. $f(x) = -x + 15$           | 86. $f(x) = 4 - x$    |

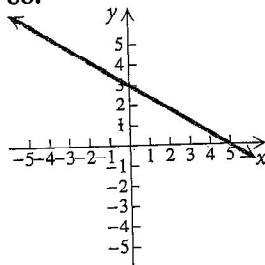
$$0 = x + 5$$

In Exercises 87–92, use the given graph to find each of the following: (a) the  $x$ -intercept and (b) the zero of the function.

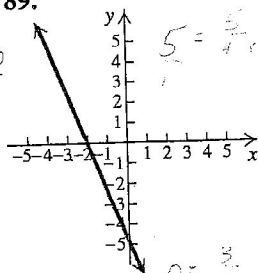
87.



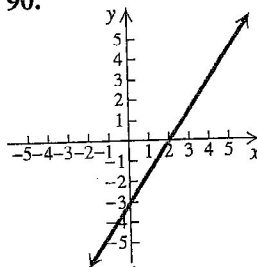
88.



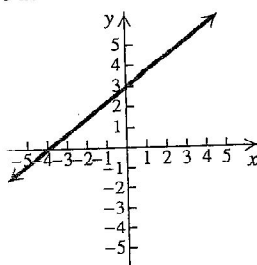
89.



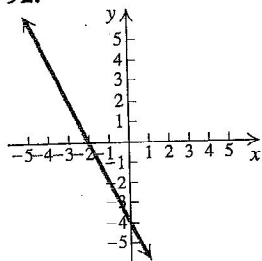
90.



91.

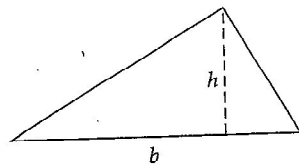


92.



Solve.

93.  $A = \frac{1}{2}bh$ , for  $b$   
(Area of a triangle)

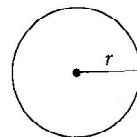


$$y = \frac{5}{4}x - 5$$

$$f(0) = -5$$

$$+50 = \frac{5}{4}x - 5$$

94.  $A = \pi r^2$ , for  $\pi$   
(Area of a circle)



95.  $P = 2l + 2w$ , for  $w$   
(Perimeter of a rectangle)

96.  $A = P + Prt$ , for  $r$   
(Simple interest)

97.  $A = \frac{1}{2}h(b_1 + b_2)$ , for  $b_2$

98.  $A = \frac{1}{2}h(b_1 + b_2)$ , for  $h$   
(Area of a trapezoid)

99.  $V = \frac{4}{3}\pi r^3$ , for  $\pi$   
(Volume of a sphere)

$$\pi = \frac{3V}{4r^3}$$

100.  $V = \frac{4}{3}\pi r^3$ , for  $r^3$

101.  $F = \frac{9}{5}C + 32$ , for  $C$   
(Temperature conversion)

102.  $Ax + By = C$ , for  $y$   
(Standard linear equation)

103.  $Ax + By = C$ , for  $A$

104.  $2w + 2h + l = p$ , for  $w$

105.  $2w + 2h + l = p$ , for  $h$

106.  $3x + 4y = 12$ , for  $y$

107.  $2x - 3y = 6$ , for  $y$

108.  $T = \frac{3}{10}(I - 12,000)$ , for  $I$

109.  $a = b + bcd$ , for  $b$

110.  $q = p - np$ , for  $p$

111.  $z = xy - xy^2$ , for  $x$

112.  $st = t - 4$ , for  $t$

$$\frac{5}{4} \cdot \frac{4}{5}$$